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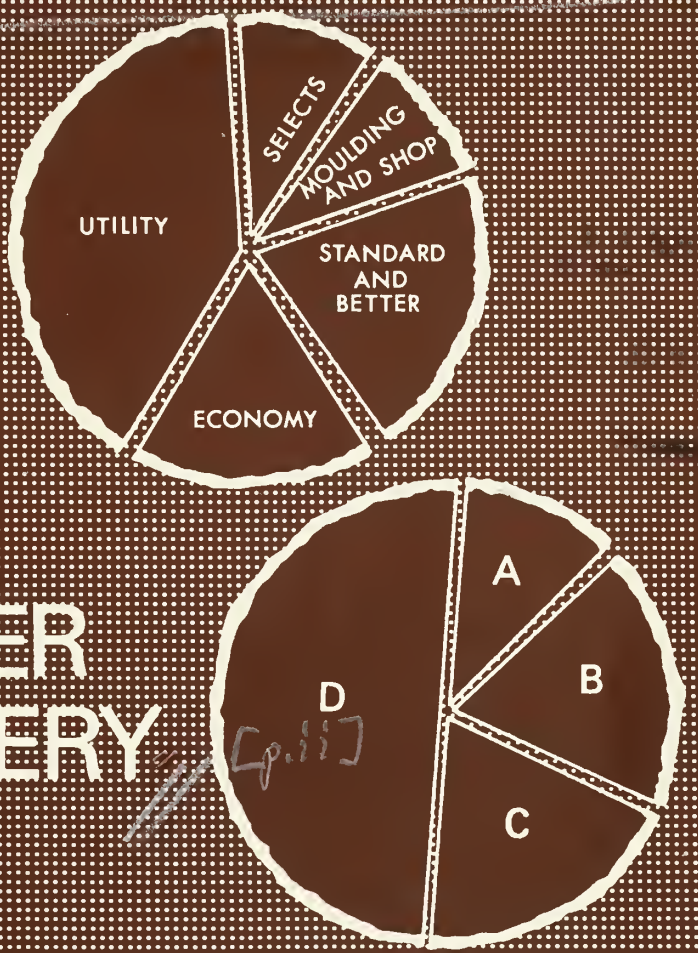
DOUGLAS-FIR CULL LOGS AND CULL PEELER BLOCKS--

LUMBER AND VENEER RECOVERY



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ABSTRACT

This report presents lumber and veneer recovery from Coast Douglas-fir cull sawn logs and cull peeler blocks. These logs and blocks were a portion of 10 samples of timber throughout Oregon, Washington, and California which were processed to obtain current lumber and veneer yields.

Recovery information is presented by 1-inch diameter class for 116 cull logs and 59 cull blocks. The lumber volume in Utility and Economy grades was 77 percent; cubic volume recovery was 41 percent. Cubic volume recovery for veneer was 20 percent, with 50 percent of the veneer volume in grade D.

Keywords: Lumber recovery, veneer recovery, Douglas-fir, cull logs, *Pseudotsuga menziesii*

INTRODUCTION

In this report, we present tables of lumber and veneer recovery percentages for Coast Douglas-fir[1] cull sawn logs and cull peeled blocks. They show product recovery by diameter classes for logs and peeler blocks judged by a scaler to be less than one-third sound. Scaling methods used were those of the U.S. Forest Service (*5*).

The cull sawn-length logs and cull peeler blocks usually resulted from bucking a woods-length log at the mill. Cull long-butt sections or cull logs bucked out of the tree bole in the woods are not included. All logs came from standing live trees. However, a full range of scale-reducing characteristics was present. Rot (including firm white speck), shake, and pitch rings were common deductions.

The sample of cull logs and blocks is not intended to represent the amount or type of cull expected from a given timber sale. These logs and blocks were part of our sample of standing live timber for a series of 10 lumber and veneer recovery studies conducted in Washington, Oregon, and California. The studies were made to provide both updated lumber and veneer recovery information (*2*, *3*) and the basis for developing a new log grading system (*4*) for Coast Douglas-fir.

Lumber recovery is based on the shipping tally volumes for 116 cull logs that were sawn. Each board was tallied by thickness, width, length, and grade.[2]

Veneer recovery is the square-foot volume, 3/8-inch basis, for the 59 cull blocks that were peeled. The volumes are based on the grade (see footnote 2) and tally of dry, untrimmed veneer from each block.

Timber buyers, sellers, and processors, forest land managers, and forest resource and inventory personnel should find the information useful.

DISCUSSION OF RESULTS

We have summarized the lumber and veneer grade recoveries in figure 1. With all log sizes combined, the Standard and Better lumber recovery, including Shops and Selects, was 22.2 percent. Curves of percent recovery for various groupings of lumber grades by diameter are shown in figure 2. In table 1, we show the lumber grade recovery percent by 1-inch log diameter classes. Veneer recovery in grades A to B patch averaged 26.2 percent. Table 2 presents the veneer grade recovery by 1-inch block diameter classes. Curves of percent recovery by veneer grade are shown in figure 3.

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[1] *Pseudotsuga menziesii* (Mirb.) Franco var. *menziesii*.

[2] Lumber was graded by or under the supervision of the Western Wood Products Association and West Coast Lumber Inspection Bureau. Veneer was graded by or under the supervision of Inspectors of the American Plywood Association or the Timber Engineering Company.

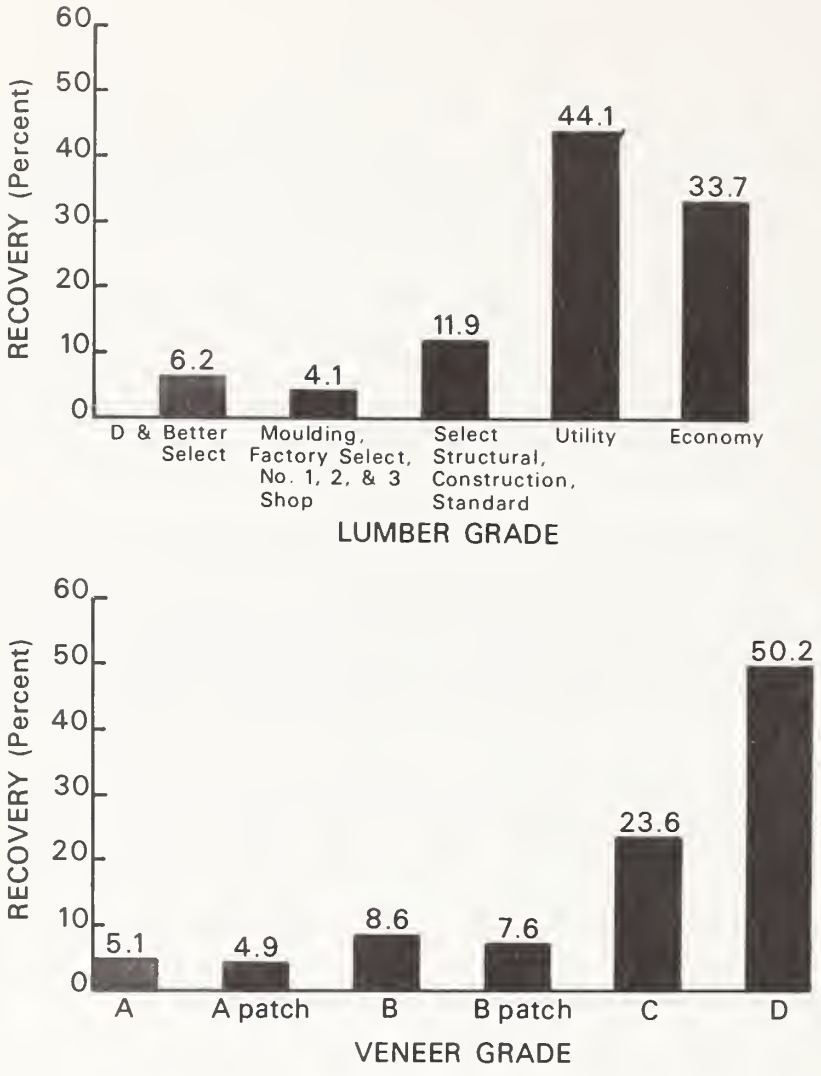

Figure 1.--*Average lumber and veneer grade recovery percentages for cull sawn logs and cull peeled blocks.*

Table 1.-- *Sawn logs--lumber grade yields by scale diameter*

Log scale diameter (Inches)	Number of logs	Lumber tally	Lumber grade				
			D & Better Select	Moulding, Factory Select, No. 1, 2, & 3 Shop	Standard & Better	Utility	Economy
		Board feet	*Percent*				
7	1	53	0	0	54.7	45.3	0
8	0	--	--	--	--	--	--
9	2	175	0	0	73.7	10.9	15.4
10	0	--	--	--	--	--	--
11	1	174	1.7	0	6.3	74.2	17.8
12	2	155	3.2	5.2	25.8	19.4	46.4
13	0	--	--	--	--	--	--
14	1	209	0	0	40.2	59.8	0
15	1	104	0	0	35.6	56.7	7.7
16	2	212	0	0	23.1	20.3	56.6
17	2	228	0	0	34.2	60.5	5.3
18	1	322	4	3	3.4	23.9	64.6
19	2	276	0	0	23.2	60.5	16.3
20	8	1,777	0		12.6	64.8	22.3
21	1	336	0	0	44.3	39.3	16.4
22	5	1,369	.4	0	14.5	61.4	23.7
23	5	2,028	1.9	1.5	4.4	64.6	27.6
24	3	959	2.4	2.5	11.4	11.3	72.4
25	7	2,665	8.2	1.1	15.1	38.4	37.2
26	4	1,016	.5	1.6	2.6	26.7	68.6
27	4	2,037	.6	5.0	4.5	25.6	64.3
28	3	1,102	1.4	3.8	7.9	44.8	42.1
29	7	2,809	9.9	3.8	12.1	33.8	40.4
30	5	2,283	6.8	5.8	4.4	68.2	14.8
31	5	2,022	9.2	2.6	15.3	26.6	46.3
32	4	3,203	10.3	1.6	8.3	49.2	30.6
33	4	2,620	13.1	6.0	4.9	55.6	20.4
34	4	3,444	2.7	2.1	17.9	41.3	36.0
35	2	1,806	3.7	2.3	14.4	55.1	24.5
36	3	2,631	.2	7.7	5.1	37.8	49.2
37	3	940	13.6	0	7.4	46.2	32.8
38	4	2,496	2.0	6.8	7.8	54.2	29.2
39	4	3,080	5.2	0	16.8	44.4	33.6
40	1	573	17.1	0	24.4	43.7	14.8
41	5	5,347	6.2	2.0	13.6	64.6	13.6
42	3	2,744	5.0	18.3	7.5	23.9	45.3
43	0	--	--	--	--	--	--
44	0	--	--	--	--	--	--
45	0	--	--	--	--	--	--
46	0	--	--	--	--	--	--
47	1	885	4.4	0	10.6	16.7	68.3
48	0	--	--	--	--	--	--
49	2	1,549	35.3	0	19.0	23.2	22.5
50	2	2,808	5.5	4.0	8.0	38.0	44.5
51	0	--	--	--	--	--	--
52	0	--	--	--	--	--	--
53	1	138	28.2	22.5	25.4	15.9	8.0
54	1	1,505	7.4	23.7	24.5	21.9	22.5
Total or average	116	58,080	6.2	4.1	11.9	44.1	33.7

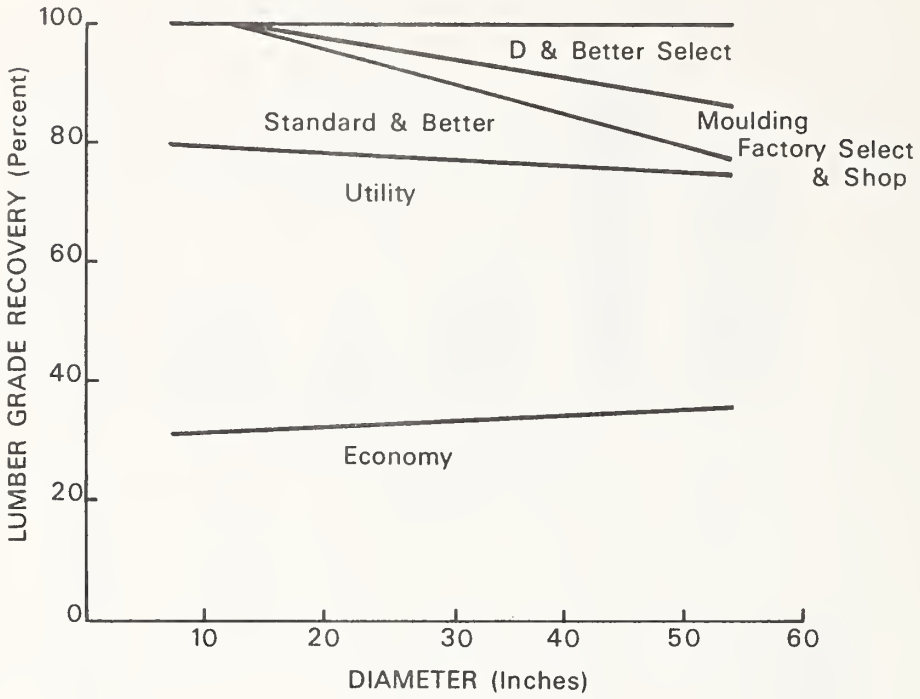

Figure 2.--*Percent lumber grade recovery by diameter, small-end log.*

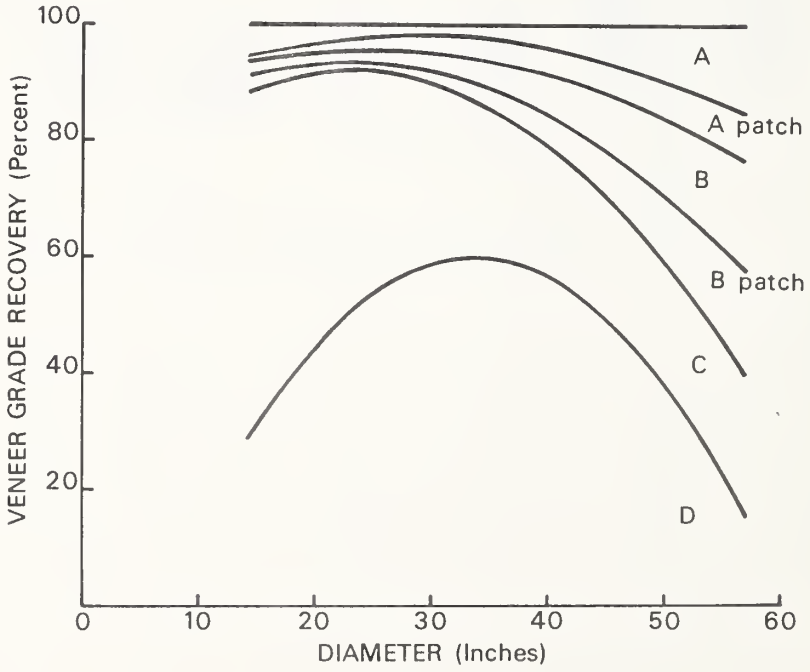

Figure 3.--*Percent veneer grade recovery by diameter, small-end block.*

Table 2.--*Peeler blocks--veneer grade yields by block scale diameter*

Block scale diameter (inches)	Number of blocks	Veneer tally[1/]	Veneer grade					
			A	A patch	B	B patch	C	D
		Square feet	- - - - - - - - - - - - *Percent* - - - - - - - - - - - -					
14	1	5	0	0	0	0	100.0	0
15	3	103	0	0	0	0	47.6	52.4
16	4	357	10.1	5.3	0	7.8	49.1	27.7
17	0	--	--	--	--	--	--	--
18	0	--	--	--	--	--	--	--
19	1	51	25.5	0	0	0	29.4	45.1
20	2	98	1.0	0	5.1	5.1	47.0	41.8
21	3	252	0	0	0	0	11.9	88.1
22	0	--	--	--	--	--	--	--
23	0	--	--	--	--	--	--	--
24	2	74	0	0	1.4	5.4	24.3	68.9
25	3	265	1.9	2.3	8.3	0	41.5	46.0
26	1	75	0	0	8.0	0	64.0	28.0
27	2	183	0	10.4	13.7	4.9	45.9	25.1
28	0	--	--	--	--	--	--	--
29	4	1,188	1.4	.2	2.9	.8	39.1	55.6
30	1	112	4.5	0	2.7	11.6	17.0	64.2
31	1	308	0	0	6.8	3.2	20.8	69.2
32	2	403	0	7.2	.7	0	21.3	70.8
33	2	467	1.5	3.2	0	13.7	15.8	65.8
34	4	1.626	1.6	3.1	6.6	2.7	37.8	48.2
35	5	2,111	.5	0	2.3	.8	18.4	78.0
36	3	1,537	0	0	2.1	.7	15.6	81.6
37	2	1,554	6.4	7.2	8.0	23.1	19.4	35.9
38	2	491	0	0	7.7	0	50.1	42.2
39	3	1,190	4.2	20.3	8.4	2.5	22.8	41.8
40	0	--	--	--	--	--	--	--
41	1	565	0	0	0	0	15.2	84.8
42	0	--	--	--	--	--	--	--
43	1	352	20.5	19.3	4.0	2.8	8.8	44.6
44	1	543	21.7	5.3	1.0	5.7	1.8	63.7
45	1	368	0	.3	2.4	9.0	41.1	47.2
46	1	1,055	17.9	1.8	7.0	6.9	8.0	58.4
47	0	--	--	--	--	--	--	--
48	1	427	0	0	12.2	11.5	24.1	52.2
49	0	--	--	--	--	--	--	--
50	1	1,368	20.2	8.7	32.5	16.5	18.3	3.8
51	0	--	--	--	--	--	--	--
52	0	--	--	--	--	--	--	--
53	0	--	--	--	--	--	--	--
54	0	--	--	--	--	--	--	--
55	0	--	--	--	--	--	--	--
56	0	--	--	--	--	--	--	--
57	1	2,364	3.0	9.2	21.0	19.4	22.3	25.1
Total or average	59	19,492	5.1	4.9	8.6	7.6	23.6	50.2

[1/] 3/8-inch basis.

The distribution of cull logs and blocks by 3-inch diameter classes is shown in table 3. Fifty-eight percent of the logs and 66 percent of the blocks would have been No. 3 Sawmill grade, based on surface characteristics of the log, if they had not been cull.

Table 3.--*Distribution of cull logs and cull blocks by grade*[1/] *and 3-inch diameter classes*

Log diameter class (inches)	Log grade					
	No. 2 and 3 Peeler		No. 2 Sawmill		No. 3 Sawmill	
	Sawn logs	Peeled blocks	Sawn logs	Peeled blocks	Sawn logs	Peeled blocks
	Number					
7[2/]	--	--	--	--	1	0
10	--	--	--	--	3	0
13	--	--	0	0	3	1
16	--	--	1	4	4	3
19	--	--	5	1	6	2
22	--	--	4	1	7	2
25	1	0	4	0	9	6
28	0	0	7	1	7	5
31	0	0	3	0	11	4
34	0	0	5	2	5	9
37	0	0	5	4	5	3
40	0	0	7	1	3	3
43	1	0	1	2	1	0
46	0	0	0	1	1	1
49+	1	2	4	1	1	0
Total	3	2	46	18	67	39

[1/] Based on surface characteristics only, using "Log grade descriptions for Douglas-fir," USDA For. Serv., Reg. 6, Form R-6 2440 (Revised 12/61).

[2/] The 7-inch diameter class includes logs 5.6 to 8.5 inches in diameter.

Lumber.--Table 4 presents the log scale, board-foot, and cubic-foot lumber recovery information for sawn logs. The cubic volume of lumber recovered averaged 41 percent of the cubic-foot log volume. This compares with an average recovery of 64 percent for the 4,974 sawn-length cull logs (*2*) in the 10 studies.

Table 4.--*Sawn logs--summary of log scale, lumber tally, and cubic volumes by diameter*

Log scale diameter (inches)	Number of logs	Scale		Lumber		Cubic volume				
		Gross	Net	Recovery	Recovery ratio	Log	Lumber	Lumber recovery	Sawdust	Chippable residue
		Board feet			*Percent*	*Cubic feet*		*Percent*	*Cubic feet*	
7	1	30	0	53	(1/)	5.53	4.40	80	0.81	0.32
8	0	--	--	--	--	--	--	--	--	--
9	2	130	20	175	875	27.33	14.57	53	2.97	9.79
10	0	--	--	--	--	--	--	--	--	--
11	1	80	0	174	(1/)	25.13	14.70	58	3.12	7.31
12	2	230	30	155	517	43.34	13.03	30	2.97	27.34
13	0	--	--	--	--	--	--	--	--	--
14	1	90	10	209	2,090	21.75	16.31	75	3.27	2.17
15	1	70	0	104	(1/)	11.18	8.68	78	1.45	1.05
16	2	470	70	212	303	74.52	17.36	23	4.10	53.06
17	2	280	10	228	2,280	47.47	17.83	38	3.64	26.00
18	1	390	20	322	1,610	55.28	26.05	47	4.18	25.05
19	2	450	40	276	690	68.65	23.22	34	4.13	41.30
20	8	2,280	240	1,777	740	322.18	144.28	45	27.29	150.61
21	1	300	30	336	1,120	55.01	27.96	51	4.27	22.78
22	5	1,880	260	1,369	527	264.55	112.37	42	18.72	133.46
23	5	2,490	300	2,028	676	337.71	169.59	50	28.66	139.46
24	3	1,290	120	959	799	179.68	77.25	43	12.12	90.31
25	7	3,480	510	2,665	523	468.95	221.75	47	41.70	205.50
26	4	1,870	190	1,016	535	236.97	81.90	35	14.05	141.02
27	4	2,330	190	2,037	1,072	290.91	164.47	57	28.74	97.70
28	3	1,600	220	1,102	501	200.01	91.83	46	19.53	88.65
29	7	5,230	620	2,809	453	668.22	231.88	35	43.26	393.08
30	5	3.920	580	2,283	394	499.85	193.39	39	38.31	268.15
31	5	3,910	540	2,022	374	517.64	165.53	32	28.47	323.64
32	4	3,810	400	3,203	801	481.36	262.90	55	50.57	167.89
33	4	3,730	400	2,620	655	507.04	220.88	44	41.69	244.47
34	4	3,500	310	3,444	1,111	487.40	279.69	57	48.95	158.76
35	2	2,300	350	1,806	516	302.69	150.93	50	18.60	133.16
36	3	2,760	320	2,631	822	371.81	213.41	57	33.05	125.35
37	3	4,070	540	940	174	529.54	79.41	15	14.16	435.97
38	4	4,400	500	2,496	499	569.45	208.27	37	35.22	325.96
39	4	5,040	570	3,080	540	668.37	258.43	39	57.61	352.33
40	1	1,200	300	573	191	161.62	48.81	30	9.48	103.33
41	5	6,990	550	5,347	972	945.10	452.78	48	82.80	409.52
42	3	4,190	530	2,744	518	555.20	233.08	42	55.50	266.62
43	0	--	--	--	--	--	--	--	--	--
44	0	--	--	--	--	--	--	--	--	--
45	0	--	--	--	--	--	--	--	--	--
46	0	--	--	--	--	--	--	--	--	--
47	1	1,660	170	885	521	205.34	73.82	36	25.57	105.95
48	0	--	--	--	--	--	--	--	--	--
49	2	3,820	610	1,549	254	476.98	130.91	27	36.85	309.22
50	2	3,980	600	2,808	468	488.16	229.18	47	52.17	206.81
51	0	--	--	--	--	--	--	--	--	--
52	0	--	--	--	--	--	--	--	--	--
53	1	1,840	90	138	153	218.56	12.04	6	2.31	204.21
54	1	2,180	540	1,505	279	304.50	127.71	42	24.67	152.12
Total or average	116	88,270	10,780	58,080	539	11,694.98	4,820.60	41	924.96	5,949.42

1/ Cannot be calculated because net scale was zero.

Notice the high board-foot recovery or ratio of 539 percent (an overrun of over 400 percent) for the cull logs. This resulted from many logs being scaled as having a zero net scale yet, when sawn, producing some low grade lumber. These logs averaged only 12-percent sound. Overrun for the noncull logs in the 10 studies was 28 percent.

Sawdust volume was calculated using actual rough green lumber sizes and an average kerf for each mill. These calculations are part of the computer program (*1*) used to compile the data. Chippable residue is determined by subtracting lumber and sawdust volume from the log volume. It includes a small amount of sawdust produced from slabs, edgings, and trim ends.

A wide range of lumber sizes was produced for each lumber grade. The description of item sizes under each lumber grade is contained in table 5. Table 6 shows the percentage distribution of study lumber by grade and item. For example, note in table 6 that lumber item group 6 under B and Better Select shows 0.24 percent. Turning to table 5 and item group 6 under B and Better Select we see 2x4's. Thus the 0.24 is the percentage of B and Better Select 2x4's produced from the total volume of 58,080 board feet. Using tables 5 and 6 together, we determine that the total recovery in 2x4's was 16.06 percent.

Veneer.--Table 7 presents the scale and recovery volumes for the cull blocks. The cubic recovery percentage for veneer averaged 19.6 percent, which is less than half the lumber cubic recovery. The high recovery ratio of 36.10 square feet per board foot results from veneer recovery from some blocks which were scaled as zero net volume. Comparable values for the noncull block data (*3*) from these studies was 52.7 percent cubic veneer recovery and 2.71 recovery ratio--all log grades.

Core volume was 420.47 cubic feet or 13.7 percent of the total block volume. This is higher than the 9.5 percent for the 3,042 blocks in the noncull data (*3*), indicating the larger cores that result from peeling cull blocks.

Table 8 summarizes the distribution of veneer items and grade from the cull blocks. The recovery of 4-foot core or fishtail veneer was 40.4-percent grade C. This compares with 56.5 percent from the noncull block data indicating the roundup or 4-foot fishtail recovery did not differ greatly for the cull blocks. About 7.5 percent of all the cull block veneer was grade C and 4 feet long, compared with 4.1 percent for the noncull block data (*3*). The significance of this point is that a mill peeling cull blocks can expect to recover some C grade veneer from roundup. However, full and half sheet veneer will be from 50 to 70 percent grade D (table 8).

Table 5.--*Index of the location of lumber items produced*

Lumber item group[1/]	Lumber grades												
	B & Better Select	C Select	D Select	Moulding	Factory Select	No. 1 Shop	No. 2 Shop	No. 3 Shop	Select Structural	Construction	Standard	Utility	Economy
	Inches												
1	1x4	1x4	1x4	8/8	8/8	8/8	8/8	8/8	1x4	1x4	1x4	1x4	1x4
2	1x6	1x6	1x6	10/8	10/8	10/8	10/8	10/8	1x6	1x6	1x6	1x6	1x6
3	1x8	1x8	1x8	11/8	11/8	11/8	11/8	11/8	1x8	1x8	1x8	1x8	1x8
4	1x10	1x10	1x10	12/8	12/8	12/8	12/8	12/8	1x10	1x10	1x10	1x10	1x10
5	1x12	1x12	1x12	13/8	13/8	13/8	13/8	13/8	1x12	1x12	1x12	1x12	1x12
6	2x4	2x4	2x4	14/8	14/8	14/8	14/8	14/8	2x4	2x4	2x4	2x4	2x4
7	2x6	2x6	2x6	16/8	16/8	16/8	16/8	16/8	2x6	2x6	2x6	2x6	2x6
8	2x8	2x8	2x8	--	--	--	--	--	2x8	2x8	2x8	2x8	2x8
9	2x10	2x10	2x10	--	--	--	--	--	2x10	2x10	2x10	2x10	2x10
10	2x12	2x12	2x12	--	--	--	--	--	2x12	2x12	2x12	2x12	2x12
11	3x4	3x4	3x4	--	--	--	--	--	3x4	3x4	3x4	3x4	3x4
12	3x6	3x6	3x6	--	--	--	--	--	3x6	3x6	3x6	3x6	3x6
13	3x8	3x8	3x8	--	--	--	--	--	3x8	3x8	3x8	3x8	3x8
14	3x10	3x10	3x10	--	--	--	--	--	3x10	3x10	3x10	3x10	3x10
15	3x12	3x12	3x12	--	--	--	--	--	3x12	3x12	3x12	3x12	3x12
16	5+x6	5+x6	5+x6	--	--	--	--	--	5+x6	5+x6	5+x6	5+x6	5+x6
17	5+x8	5+x8	5+x8	--	--	--	--	--	5+x8	5+x8	5+x8	5+x8	5+x8
18	5+x10	5+x10	5+x10	--	--	--	--	--	5+x10	5+x10	5+x10	5+x10	5+x10
19	5+x12	5+x12	5+x12	--	--	--	--	--	5+x12	5+x12	5+x12	5+x12	5+x12

[1/] The 3-inch groups include the 4-inch lumber, and the 2x4 groups include any 2x2-inch and 2x3-inch lumber produced.

Table 6.--*Percentage distribution of study lumber by grade and lumber item group*

Lumber item group	B & Better Select	C Select	D Select	Moulding	Factory Select	No. 1 Shop	No. 2 Shop	No. 3 Shop	Select Structural	Construction	Standard	Utility	Economy	Lumber tally volume
	Percent													*Board feet*
1[1]	(2)	0.39	0.18	1.04	0	0	0	0	0	0	0.16	0.43	0.34	1,579
2	0.10	.37	.31	.32	0	.10	1.06	1.05	0	.21	.35	1.09	.44	3,132
3	0	.30	.41	0	0	0	0	0	0	.10	.73	4.69	6.07	7,141
4	(2)	.08	.26	0	0	0	0	0	0	0	.23	.39	.08	623
5	(2)	.16	.11	0	.06	.11	.30	(2)	0	0	.13	.48	.11	874
6	.24	.66	.65	0	0	0	0	0	.18	.83	1.05	8.30	4.15	9,334
7	.19	.35	.20	0	0	0	0	0	.20	.75	1.20	5.29	3.09	6,548
8	0	.25	.17	0	0	0	0	0	.17	.87	.95	4.54	3.64	6,147
9	.05	(2)	0	0	0	0	0	0	.26	(2)	.10	.96	1.77	1,880
10	.14	.12	0	0	0	0	0	0	.31	.58	1.65	10.29	12.40	14,804
11	0	0	0	0	0	0	0	0	0	0	0	.58	.60	686
12	0	.10	.10	0	0	0	0	0	0	.08	0	0	.23	300
13	0	.12	.07	0	0	0	0	0	.09	.09	.20	.07	0	376
14	0	0	0	0	0	0	0	0	0	0	0	.34	0	200
15	0	0	0	0	0	0	0	0	0	.06	.19	4.45	.83	3,208
16	--	--	--	--	--	--	--	--	--	--	--	--	--	0
17	--	--	--	--	--	--	--	--	--	--	--	--	--	0
18	--	--	--	--	--	--	--	--	--	--	--	--	--	0
19	0	0	0	0	0	0	0	0	0	0	0	2.15	0	1,248
Cumulative percent	0.80	3.74	6.20	7.56	7.62	7.83	9.19	10.27	11.48	15.26	22.20	66.25	100.00	--
	Board feet													
Total volume	465	1,707	1,429	790	35	122	790	627	703	2,195	4,031	25,584	19,602	58,080

[1] Table 6 shows board sizes represented by each item group. For example, boards in group 1 of B & Better Select are 1x4's.

[2] Less than 0.05 percent.

Table 7.-- *Peeler blocks--summary of block scale, veneer tally, and cubic volume by diameter*

Block scaling diameter (inches)	Number of blocks	Block scale		Veneer		Cubic volume					
		Gross	Net	Recovery[1]	Recovery ratio	Block	Veneer	Core	Veneer recovery	Reject veneer[2]	Chippable residue
		Board feet		*Square feet*	*Percent*	*Cubic feet*			*Percent*	*Cubic feet*	
14	1	60	0	5	(3/)	13.85	0.14	12.28	1.0	0	1.43
15	3	210	0	103	(3/)	40.68	3.27	13.95	8.0	1.77	21.69
16	4	320	20	357	17.85	59.71	11.56	29.63	19.4	2.34	16.18
17	0	--	--	--	--	--	--	--	--	--	--
18	0	--	--	--	--	--	--	--	--	--	--
19	1	120	20	51	2.55	19.42	1.66	3.79	8.5	5.16	8.81
20	2	280	0	98	(3/)	40.32	2.95	10.32	7.3	0	27.05
21	3	450	0	252	(3/)	77.40	8.04	34.34	10.4	5.83	29.19
22	0	--	--	--	--	--	--	--	--	--	--
23	0	--	--	--	--	--	--	--	--	--	--
24	2	390	0	74	(3/)	49.82	2.41	5.89	4.8	9.27	32.25
25	3	690	0	265	(3/)	91.59	7.79	22.83	8.5	27.76	33.21
26	1	250	0	75	(3/)	30.37	2.21	2.85	7.3	14.18	11.13
27	2	540	50	183	3.66	75.84	5.81	20.50	7.7	2.48	47.05
28	0	--	--	--	--	--	--	--	--	--	--
29	4	1,240	0	1,188	(3/)	161.81	35.92	19.07	22.2	21.72	85.10
30	1	330	50	112	2.24	51.85	3.66	3.66	7.0	15.83	28.70
31	1	360	0	308	(3/)	46.50	9.63	2.88	20.7	10.81	23.18
32	2	740	40	403	10.07	100.59	12.76	18.12	12.7	8.95	60.76
33	2	780	40	467	11.67	105.65	14.93	8.90	14.1	29.94	51.88
34	4	1,600	40	1,626	40.65	235.46	49.54	25.09	21.0	14.53	146.30
35	5	2,200	20	2,111	105.55	302.21	65.23	18.11	21.6	43.63	175.24
36	3	1,380	0	1,537	(3/)	193.62	47.42	12.35	24.5	31.38	102.47
37	2	1,020	0	1,554	(3/)	132.59	48.43	8.34	36.5	1.34	74.48
38	2	1,080	0	491	(3/)	146.03	15.26	12.29	10.4	4.14	114.34
39	3	1,680	60	1,190	19.83	226.99	37.30	27.86	16.4	8.41	153.42
40	0	--	--	--	--	--	--	--	--	--	--
41	1	640	0	565	(3/)	85.06	18.38	6.94	21.6	0	59.74
42	0	--	--	--	--	--	--	--	--	--	--
43	1	700	40	352	8.80	90.64	11.40	5.26	12.6	18.46	55.52
44	1	740	40	543	13.57	93.05	17.63	5.16	18.9	15.92	54.34
45	1	760	0	368	(3/)	102.67	11.15	18.17	10.9	1.58	71.77
46	1	790	120	1,055	8.79	95.08	34.31	3.71	36.1	25.15	31.91
47	0	--	--	--	--	--	--	--	--	--	--
48	1	860	0	427	(3/)	114.24	12.94	17.59	11.3	2.97	80.74
49	0	--	--	--	--	--	--	--	--	--	--
50	1	940	0	1,368	(3/)	123.13	41.46	19.67	33.7	.37	61.63
51	0	--	--	--	--	--	--	--	--	--	--
52	0	--	--	--	--	--	--	--	--	--	--
53	0	--	--	--	--	--	--	--	--	--	--
54	0	--	--	--	--	--	--	--	--	--	--
55	0	--	--	--	--	--	--	--	--	--	--
56	0	--	--	--	--	--	--	--	--	--	--
57	1	1,220	0	2,364	(3/)	171.60	71.66	30.92	41.8	1.04	67.98
Total or average	59	22,370	540	19,492	36.10	3,077.77	604.85	420.47	19.6	324.96	1,727.49

[1/] 3/8-inch basis.

[2/] Reject veneer is below grade veneer pulled for use in mill certified panels.

[3/] Cannot be calculated because net scale was zero. Recovery ratio is based on net block scale and the square feet of dry untrimmed veneer.

Table 8.--*Distribution of study veneer by grade and veneer item*

Veneer item	Veneer grade[1/]							
	A	A patch[2/]	B	B patch[2/]	C	D	Total	Reject[3/]
Full sheet								
Square feet	0	68	19	182	67	871	1,207	329
Percent	0	5.6	1.6	15.1	5.6	72.1	100.0	--
Half sheets								
Square feet	467	580	149	645	776	3,074	5,691	5,037
Percent	8.2	10.2	2.6	11.3	13.6	54.1	100.0	--
Random width								
8 foot strip								
Square feet	528	299	726	657	2,291	4,475	8,976	4,284
Percent	5.9	3.3	8.1	7.3	25.5	49.9	100.0	--
4 foot fishtail								
Square feet	0	0	774	0	1,463	1,381	3,618	593
Percent	0	0	21.4	0	40.4	38.2	100.0	--
All items								
Square feet	995	947	1,668	1,484	4,597	9,801	19,492	10,243
Percent	5.1	4.9	8.6	7.6	23.6	50.2	100.0	--

1/ National Bureau of Standards, U.S. Dept. of Commerce U.S. Product Standard PS 1-66. Products Standards Section 1966.

2/ A patch allowed maximum of 14 patches, B patch allowed maximum of 20 patches.

3/ Below grade veneer selected for possible use in mill certified type panels.

CONCLUSIONS

A mill manager can use this information to estimate lumber or veneer recovery from a similar batch of cull logs or cull blocks.

Although cull log recovery will vary by diameter, the lower lumber and veneer grades will be the predominant form of recovery.

The residue created by sawing cull logs or peeling cull blocks will be substantially greater than for nonculls.

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